

Medical Workforce Knowledge of Adrenaline (Epinephrine) Administration in Anaphylaxis in Adults Considerably Improved with Training in an UK Hospital from 2010 to 2017

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Abstract : Introduction: Life-threatening detrimental effects of inappropriate adrenaline (epinephrine) administration, e.g., by giving the wrong dose, in the context of anaphylaxis management is well documented in the medical literature. Half of the fatal anaphylactic reactions in the UK are iatrogenic, and the median time to a cardio-respiratory arrest can be as short as 5 minutes. It is therefore imperative that hospital doctors of all grades have active and accurate knowledge of the correct route, site, and dosage of administration of adrenaline. Given this time constraint and the potential fatal outcome with inappropriate management of anaphylaxis, it is alarming that surveys over the last 15 years have repeatedly shown only a minority of doctors to have accurate knowledge of adrenaline administration as recommended by the UK Resuscitation Council guidelines (2008 updated 2012). This comparison of survey results of the medical workforce over several years in a small NHS District General Hospital was conducted in order to establish the effect of the employment of multiple educational methods regarding adrenaline administration in anaphylaxis in adults. Methods: Between 2010 and 2017, several education methods and tools were used to repeatedly inform the medical workforce (doctors and advanced clinical practitioners) in a single district general hospital regarding the treatment of anaphylaxis in adults. Whilst the senior staff remained largely the same cohort, junior staff had changed fully in every survey. Examples included: (i) Formal teaching -in Grand Rounds; during the junior doctors' induction process; advanced life support courses (ii) In-situ simulation training performed by the clinical skills simulation team -several ad hoc sessions and one 3-day event in 2017 visiting 16 separate clinical areas performing an acute anaphylaxis scenario using actors- around 100 individuals from multi-disciplinary teams were involved (iii) Hospital-wide distribution of the simulation event via the Trust's Simulation Newsletter (iv) Laminated algorithms were attached to the 'crash trolleys' (v) A short email 'alert' was sent to all medical staff 3 weeks prior to the survey detailing the emergency treatment of anaphylaxis (vi) In addition, the performance of the surveys themselves represented a teaching opportunity when gaps in knowledge could be addressed. Face to face surveys were carried out in 2010 ('pre-intervention), 2015, and 2017, in the latter two occasions including advanced clinical practitioners (ACP). All surveys consisted of convenience samples. If verbal consent to conduct the survey was obtained, the medical practitioners' answers were recorded immediately on a data collection sheet. Results: There was a sustained improvement in the knowledge of the medical workforce from 2010 to 2017: Answers improved regarding correct drug by 11% (84%, 95%, and 95%); the correct route by 20% (76%, 90%, and 96%); correct site by 40% (43%, 83%, and 83%) and the correct dose by 45% (27%, 54%, and 72%). Overall, knowledge of all components -correct drug, route, site, and dose-improved from 13% in 2010 to 62% in 2017. Conclusion: This survey comparison shows knowledge of the medical workforce regarding adrenaline administration for treatment of anaphylaxis in adults can be considerably improved by employing a variety of educational methods.

Keywords : adrenaline, anaphylaxis, epinephrine, medical education, patient safety

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